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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/508,344	06/28/2005	Takeshi Arai	ITO-C477	5730
George A. Loud, Esquire BACON & THOMAS 625 Slaters Lane, Fourth Floor Alexandria, VA 22314-1176			EXAMINER WU, IVES J	
			ART UNIT 1797	PAPER NUMBER
			MAIL DATE 04/21/2008	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/508,344

Applicant(s)

ARAI, TAKESHI

Examiner

IVES WU

Art Unit

1797

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 June 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 2, 6 and 9 is/are rejected.
- 7) ☒ Claim(s) 3-5, 7-8, 10-12 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-8508)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

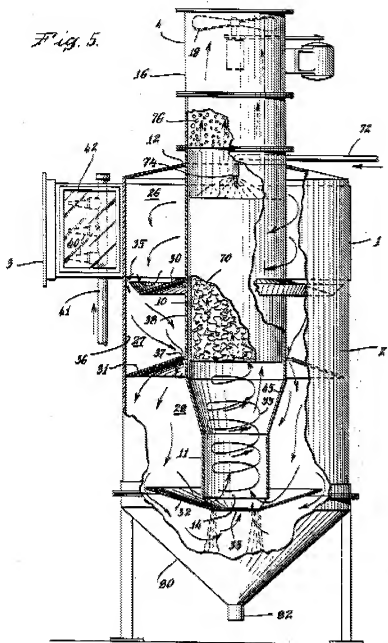
A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

- (1). **Claim 1** is rejected under 35 U.S.C. 102(b) as being anticipated by Wisting (US03989488).

As to a dust collector comprising 1) an upright tubular main body closed at both ends, 2) a tubular partition wall of a reduced diameter concentrically arranged internally of main body to define a centrally located filtration chamber, 3) an annular cyclone chamber situated outwardly of the filter chamber, the lower edge of partition wall terminating upwardly away from the bottom of main body so that filtration chamber and cyclone chamber to be communicated with each other at lower part in **independent claim 1**, Wisting (US03989488) discloses an air scrubber employing means which cause the air entering the scrubber to follow a circular path is provided for removing solid, liquid and gaseous contaminants from air. Removal is through a liquid contact system in which slow-moving contact with cleaning water is alternated with intimate turbulent contact. The circular air flow travels in a generally downward direction through a multiplicity of stages to a water and contaminant receiving tank and then the air and some water are drawn upwardly through an internal co-axial outlet expanding diameter so that only air is removed (Abstract, line 13), as illustrated in Figure below, which reads on the limitations of instant claim.

As to dust collector further comprising a filter arranged in the filter chamber and means for applying vacuum to the secondary side of filter in **independent claim 1**, Wisting (US03989488) discloses a moisture extractor 76 and outlet fan 18 as shown in the Figure below, which reads on the limitations of instant claim.



As to main body being provided with an air inlet opening tangentially to the upper part of cyclone chamber and a drain opening located at the bottom in a dust collector in **independent claim 1**, Wisting (US03989488) teaches air inlet 3 to be positioned to one side, it directs the air in a circular pattern (the air passes in a circular manner through chamber 26 in the direction

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shown by the dotted arrows in Figure 2) (Col. 3, line 31-36). Outlet for waste or salvage would be a tube 82 at bottom with the necessary valving structure (Col. 6, line 49-51), which are illustrated in the Figure above.

As to the upper part of cyclone chamber, for forming a film of water flowing down along the inner circumferential surface of main body and the outer circumferential surface of partition wall respectively, to ensure that a swirling stream of air to be treated drawn through air inlet into cyclone chamber is brought into contact with water film to thereby cause airborne dust and particles in the air to be treated to be captured therein and to cause captured dust and particles to be washed away in the dust collector in **independent claim 1**, Wisting (US03989488) discloses, in the chamber 26, the motion of the water throughout the chamber to be such that a certain percentage of it will impinge on the inner surface 35 of scrubber tank 2 and on the outer surface 38 of the outlet tube 10. these surfaces will remain wet throughout all of the stages of operation of the scrubber. By remaining wet, this provides an additional basis for removal of contamination in the air (Col. 4, line 24-31). In the chamber 27, once again, it will be noted that the inner surfaces 36 and 38 will be wet and so provide an additional scrubbing action (Col. 4, line 66-68). The water in the air-water mixture in chamber 28 either remains admixed with the air or settles on the inner surface 36 of scrubber tank 2, the outer surface 38 of outlet tube 11. That water which is on the inner surface 36 will flow downwardly into tank 20. the water on the surface 38 will flow down the outside portion of the lower end of tube 11 and will drop with a "waterfall" effect into trough 32 (Col. 5, line 29-37), since both divider 30 and 31 are trough for water, then the disclosure of three chambers would read on the limitations of instant claim.

ALTERNATIVELY, CLAIMS ARE REJECTED IN THE FOLLOWING:

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

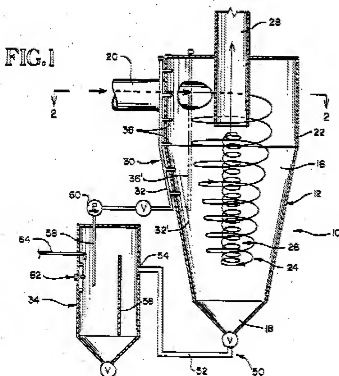
The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

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1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

(2). **Claims 1-2, 6, 9** are rejected under 35 U.S.C. 103(a) as being unpatentable over Cox (US04734109) in view of Wisting (US03989488).

As to a dust collector comprising 1) an upright tubular main body closed at both ends, 2) a tubular partition wall of a reduced diameter concentrically arranged internally of main body to define a centrally located filtration chamber, 3) an annular cyclone chamber situated outwardly of the filter chamber, the lower edge of partition wall terminating upwardly away from the bottom of main body so that filtration chamber and cyclone chamber to be communicated with each other at lower part in **independent claim 1**, Cox (US04734109) discloses effluent treatment apparatus and method of operating (Title). As shown in the figure below, which has features of instant claim.



As to dust collector further comprising a filter arranged in the filter chamber and means for applying vacuum to the secondary side of filter, main body being provided with an air inlet opening tangentially to the upper part of cyclone chamber and a drain opening located at the bottom in a dust collector in **independent claim 1**, Cox (US04734109) discloses inlet duct 20 to introduce effluent within the chamber tangentially with respect to the sidewalls (Col. 6, line 18-20). The recirculation system 50 contributing to those advantages is comprised of a fluid conduit 52 leading from the apical collection zone 18 of the cyclone 12 to the settling reservoir 34 (Col. 11, line 54-57). Cox (US04734109) **does not teach** the filter and vacuum means in the exit duct.

However, Wisting (US03989488) **teaches** the outlet fan 18 and moisture extractor 50 in the inner chamber of the air scrubbing unit as shown in the Figure 1.

The advantage of fan is to assist the clean air flow and the advantage of water extraction means is to further remove the moisture entrapped in the air (Col. 5, line 51-63).

Therefore, it would have been obvious at time of the invention to install the fan and condensation packing of Wisting in the exhaust duct of Cox in order to attain the above-cited advantages.

As to the upper part of cyclone chamber, for forming a film of water flowing down along the inner circumferential surface of main body and the outer circumferential surface of partition wall respectively, to ensure that a swirling stream of air to be treated drawn through air inlet into cyclone chamber is brought into contact with water film to thereby cause airborne dust and particles in the air to be treated to be captured therein and to cause captured dust and particles to be washed away in the dust collector in **independent claim 1**, Cox (US04734109) discloses the conditioning agents to be delivered to a treatment zone within the apparatus in a generally concurrent, generally countercurrent, or generally transverse direction with respect to the flow of effluent to be conditioned (Abstract, line 12-16). As illustrated in Figure 8, it would be obvious to have both surfaces (outer surface of exhaust duct and inner surface of cyclone to form a water film as evidenced by Wisting (US3989488) that, in addition, the motion of the water throughout the chamber to be such that a certain percentage of it will impinge on the inner surface of scrubber tank and on the outer surface of the outlet tube. these surfaces will remain wet throughout all of the stages of operation of the scrubber. B' remaining wet, this provides an additional basis for removal of contamination in the air (Col. 4, line 23-30).

As to annular spray means for spraying water toward the upper part of the inner circumferential surface of main body and the outer circumferential surface of partition wall in **claim 2**, Cox (US04734109) discloses Figure 8. The conditioning agents to be delivered to a treatment zone within the apparatus in a generally concurrent, generally countercurrent, or generally transverse direction with respect to the flow of effluent to be conditioned (Abstract, line 12-16), which would illustrate the features of instant claim.

As to one or more outwardly open supplemental drain openings provided at the lower part or bottom of main body in **claims 6 and 9**, it would obvious to have one or more drain openings at lower part of the main body. although the reference did not disclose a plurality of drain openings, the court held mere duplication of parts has no patentable significance unless a new and unexpected result is produced. In re Harza, 274 F.2d 669, 124 USPQ 378 (CCPA 1960).

Allowable Subject Matter

(3). **Claims 3-5, 7-8, 10-12** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to IVES WU whose telephone number is (571)272-4245. The examiner can normally be reached on 8:00 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Duane Smith can be reached on 571-272-1166. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Examiner: Ives Wu
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Date: April 16, 2008

/Duane S. Smith/
Supervisory Patent Examiner, Art Unit 1797